

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

LEVEL II

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS
BEFORE COMPLETING FORM

1. REPORT NUMBER

2. GOVT ACCESSION NO.

3. RECIPIENT'S CATALOG NUMBER

Research Product 80-8

AD A085868

4. TITLE (and Subtitle)

Howitzer Fire Mission Workbook

5. TYPE OF REPORT & PERIOD COVERED

6. PERFORMING ORG. REPORT NUMBER

7. AUTHOR(s)

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8. CONTRACT OR GRANT NUMBER(s)

9. PERFORMING ORGANIZATION NAME AND ADDRESS

US Army Research Institute for the Behavioral and
Social Sciences, 5001 Eisenhower Avenue
Alexandria, VA 2233310. PROGRAM ELEMENT, PROJECT, TASK
AREA & WORK UNIT NUMBERS

2Q263743A794

11. CONTROLLING OFFICE NAME AND ADDRESS

US Army DCSPER
Washington, DC 20310

12. REPORT DATE

April 1980

13. NUMBER OF PAGES

67

14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)

15. SECURITY CLASS. (of this report)

Unclassified

15a. DECLASSIFICATION/DOWNGRADING
SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release, distribution unlimited

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Field Artillery Training
Fire Missions
Training Aids
Indirect FireDirect Fire
Howitzer Sections

ABSTRACT (Continue on reverse side if necessary and identify by block number)

The workbook is a pocket-sized, performance-oriented training aid designed for field use. It contains four practice sessions that each take about one hour to complete. Each session consists of a number of dry-fire direct and indirect fire missions and two evaluation missions. The evaluation missions allow sections to keep track of their performance. The workbook can provide drill to gunners and assistant gunners and cross training for other howitzer section members.

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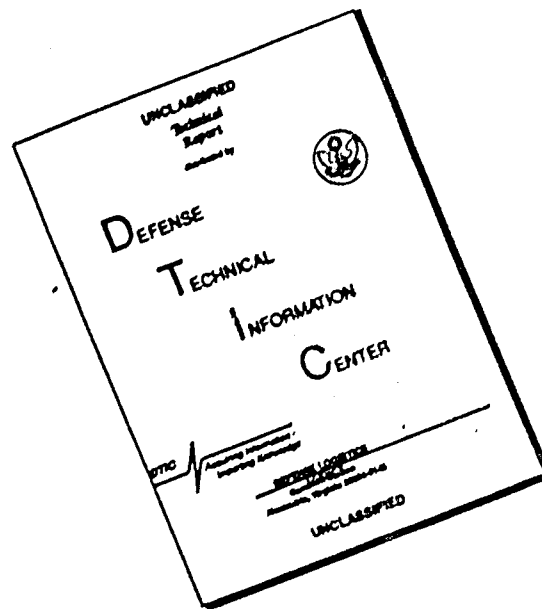
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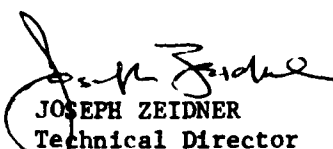
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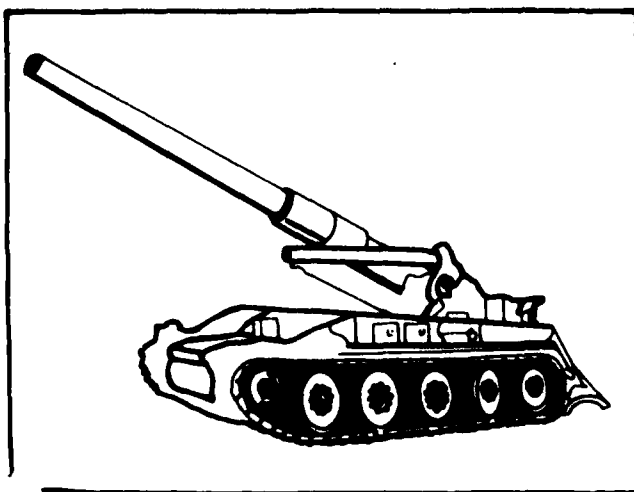
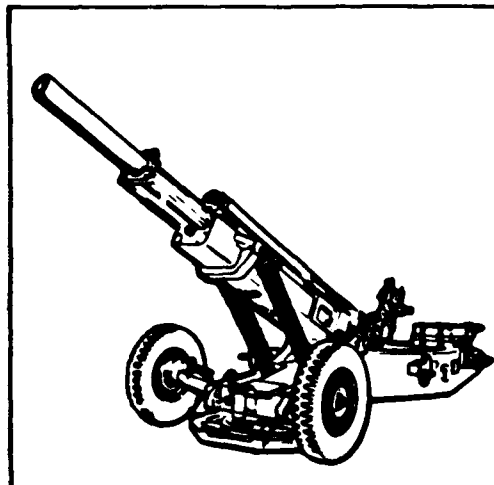
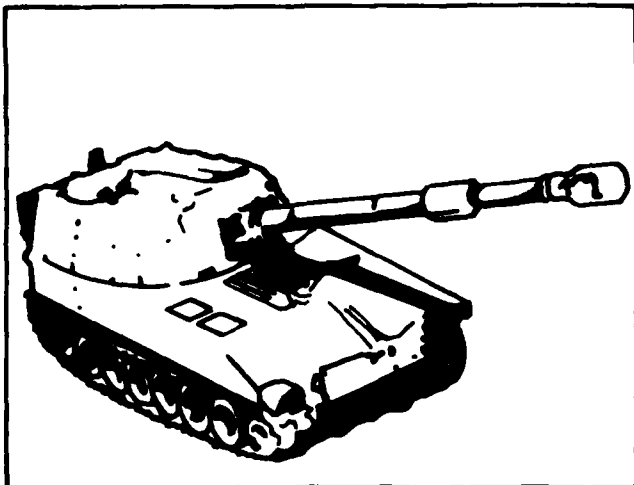
FOREWORD

The Training Technical Area of the Army Research Institute for the Behavioral and Social Sciences (ARI) has pursued a program of research directed at developing data and technology to enhance and sustain the competence, motivation and performance of individuals and units. This research product was developed within a project designed to investigate contributions of individual proficiency and personnel turbulence to overall crew performance. The final objective of the research is to determine effective personnel assignment and training procedures for units in turbulent personnel environments. This work was performed under Army Project 2Q263743A794, FY 80 Program, "Combat Skill Development and Retention" with the combined support of the Commander, US Army Field Artillery School, Ft Sill, OK; Commander, 25th Infantry Division; and Commander, 25th Infantry Division Artillery, Schofield Barracks, Hawaii.


JOSEPH ZEIDNER
Technical Director

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DDC	Buff Section	<input type="checkbox"/>
UNCLASSIFIED		<input type="checkbox"/>
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HOWITZER FIRE MISSION WORKBOOK



**U.S. Army
Research Institute
for the Behavioral
and Social Sciences**

Research Product 80-8

The Howitzer Fire Mission Workbook is a prototype training document. For comments or questions contact:

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Autovon: 284-8695
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Howitzer Fire Mission Workbook

To the Chief of Section:

The Army Research Institute designed the Howitzer Fire Mission Workbook to provide you with an organized way to conduct section drill. The workbook will be helpful for maintaining the skills of your gunner and assistant gunner. It also can be used for cross training the other members of your section.

The workbook contains four practice sessions. Each session consists of a number of hands on dry-fire missions. Each practice session takes about an hour to complete. At the end of each session is a short self-help test. The test will allow you and your men to keep track of your training progress.

Prior to each session emplace your howitzer, set out a collimator and aiming stakes. Since these are dry-fire exercises you can use any site you like for conducting this training.

Your section is to perform all of the fire missions called for during each session. Your job will be to read the fire commands and check the accuracy of your men's work. When the gunner announces the piece is ready to fire, check dial settings, sight picture, and cross-level bubbles for accuracy. Record errors in the appropriate space for that command. Correct mistakes as they occur. If you are not sure about a procedure check your Soldier's Manual or ask your Chief of Firing Battery for help.

At the end of each session, review your section's performance. Work hardest at correcting errors that occur most frequently.

Instructions for Practice Fire Missions

1. Have your section perform each fire mission.

Each day's practice session includes:

- 8 indirect fire missions
- 3 direct fire missions
- 2 evaluation missions

2. Begin each fire mission at base deflection 3200 quadrant 300

- Read fire commands
- Check accuracy
 - Check that gunner and AG entered correct numbers on dials
 - Check Gunner's Sight Picture
 - Check that all bubbles are level
- Record errors in appropriate box for each fire command
- Read instructions for administering evaluation missions
- Administer evaluation missions
- Record results of evaluation missions on the Evaluation Summary Sheet—last page of the workbook.

3. Let your men know how they did on the evaluation missions and how their performance compares to their previous performances.

4. Encourage your men to be fast and more accurate.

DAY 1**Fire Mission 1**

Fire Mission
Number One Adjust
Charge 5

	Yes	No
1. Deflection 3195, Quadrant 394		
<u>Bubbles Level</u>		
<u>Sight Picture Correct</u>		
<u>Dial Settings Correct</u>		
2. Deflection 3211, Quadrant 417		
<u>Bubbles Level</u>		
<u>Sight Picture Correct</u>		
<u>Dial Settings Correct</u>		
3. Deflection 3157, Quadrant 486		
<u>Bubbles Level</u>		
<u>Sight Picture Correct</u>		
<u>Dial Settings Correct</u>		
4. Deflection 3122, Quadrant 471		
<u>Bubbles Level</u>		
<u>Sight Picture Correct</u>		
<u>Dial Settings Correct</u>		

End of Mission

DAY 1

Fire Mission 2

Fire Mission
Number One Adjust
Charge 5

	Yes	No
1. Deflection 3247, Quadrant 259		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3299, Quadrant 367		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3341, Quadrant 329		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3200, Quadrant 300		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 1**Fire Mission 3**

Fire Mission
 Number One Adjust
 High Angle
 Charge 6

	Yes	No
1. Deflection 3107, Quadrant 1011		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3275, Quadrant 956		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3261, Quadrant 962		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3200, Quadrant 1100		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 1

Fire Mission 4

Fire Mission
Number One Adjust
High Angle
Charge 4

	Yes	No
1. Deflection 3024, Quadrant 1038		
<u>Bubbles Level</u>		
<u>Sight Picture Correct</u>		
<u>Dial Settings Correct</u>		
2. Deflection 2987, Quadrant 1089		
<u>Bubbles Level</u>		
<u>Sight Picture Correct</u>		
<u>Dial Settings Correct</u>		
3. Deflection 3000, Quadrant 1114		
<u>Bubbles Level</u>		
<u>Sight Picture Correct</u>		
<u>Dial Settings Correct</u>		
4. Deflection 3148, Quadrant 1004		
<u>Bubbles Level</u>		
<u>Sight Picture Correct</u>		
<u>Dial Settings Correct</u>		

End of Mission

DAY 1**Fire Mission 5**

Fire Mission
 Number One Adjust
 Charge 6

	Yes	No
1. Deflection 3324, Quadrant 312		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3251, Quadrant 349		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3341, Quadrant 411		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3357, Quadrant 508		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 1

Fire Mission 6—use aiming posts

Fire Mission
Number One Adjust
Charge 7

	Yes	No
1. Deflection 3476, Quadrant 472		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3508, Quadrant 510		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3467, Quadrant 498		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3421, Quadrant 413		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 1**Fire Mission 7**

Fire Mission
 Number One Adjust
 High Angle
 Charge 5

	Yes	No
1. Deflection 2976, Quadrant 973		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3009, Quadrant 1074		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3171, Quadrant 1001		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3200, Quadrant 845		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 1

Fire Mission 8

Fire Mission
Number One Adjust
Charge 6

	Yes	No
1. Deflection 3154, Quadrant 423		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3179, Quadrant 444		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3162, Quadrant 451		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3170, Quadrant 447		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 1**Direct Fire****Mission 1**

Instructions: Pick out a target to your front at approximately the range given below. Read the fire commands, then check the accuracy of the sight pictures taken up by your Gunner and AG. Have the Gunner use the central laying method.

Target that _____, _____ (Left/Right) Front,

**A. Lead Right 10, Range 1000,
Fire at Will**

Gunner's Sight Picture

Range

Go	No Go

B. Cancel Lead, Add 50

Gunner's Sight Picture

Range

End of Mission

DAY 1

Direct Fire

Mission 2

Instructions: Pick out a target to your front at approximately the range given below. Read the fire commands, then check the accuracy of the sight pictures taken up by your Gunner and AG. Have the Gunner use the central laying method.

Target that _____, _____ (Left/Right) Front,

**A. Load Left 5, Range 800,
Fire at Will**

Gunner's Sight Picture

Range

Go

No Go

B. Load Left 15, Drop 100

Gunner's Sight Picture

Range

End of Mission

DAY 1**Direct Fire****Mission 3**

Instructions: Pick out a target to your front at approximately the range given below. Read the fire commands, then check the accuracy of the sight pictures taken up by your Gunner and AG. Have the Gunner use the central laying method.

Target that _____, _____ (Left/Right) Front,

A. Lead Right 15, Range 1200,

Fire at Will

Gunner's Sight Picture

Range

B. Lead Right 5, Add 150

Gunner's Sight Picture

Range

Go	No Go

End of Mission

Instructions for Administering Evaluation Missions

We included timed evaluation fire missions each day so you and your section can chart your improvement. You will administer and time the exercises. Be as accurate as possible in timing and checking the correctness of your men's work.

1. Begin each mission at base deflection 3200 quadrant 300.
2. Read fire commands
3. Time your section's performance
 - Use your watch's second hand
 - Time each fire mission and command the same way.
 - Start timing after you say the deflection
 - Stop timing when the Gunner says "Ready."
4. Record the response time for each command.
5. Check accuracy
 - Dial settings
 - Sight Picture correct
 - Bubbles level
6. If you detect an error double the response time for that command.
7. After completing both fire missions
 - Add up response times for each mission
 - Record results on the Evaluation Summary Page-- last page of the workbook.
8. Compare your section's time with the day(s) before
9. Note if any errors occurred more than once. Work on correcting them during the next practice session.
10. Let your section know their times and how they are progressing.

EVALUATION DAY 1

Fire Mission 1

Fire Mission
Number One Adjust
Charge 4

	Yes	No
1. Deflection 3231, Quadrant 380		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		
2. Deflection 3343, Quadrant 365		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		
3. Deflection 3303, Quadrant 387		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		
4. Deflection 3308, Quadrant 384		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		

End of Mission

Total Time for Fire Mission _____

EVALUATION DAY 1

Fire Mission 2

Fire Mission
Number One Adjust
Charge 5

	Yes	No
1. Deflection 3184, Quadrant 287		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		
2. Deflection 3134, Quadrant 428		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		
3. Deflection 3259, Quadrant 408		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		
4. Deflection 3268, Quadrant 413		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		

End of Mission

Total Time for Fire Mission _____

**Record Today's Evaluation
Results on the Summary Sheet
Located on the Last Page
of the Workbook**

**Give Your Gunner and Assistant
Gunner Feedback on Their
Performance**

Instructions for Practice Fire Missions

1. Have your section perform each fire mission.

Each day's practice session includes:

- 8 indirect fire missions
- 3 direct fire missions
- 2 evaluation missions

2. Begin each fire mission at base deflection 3200 quadrant 300

- Read fire commands
- Check accuracy
 - Check that gunner and AG entered correct numbers on dials
 - Check Gunner's Sight Picture
 - Check that all bubbles are level
- Record errors in appropriate box for each fire command
- Read instructions for administering evaluation missions
- Administer evaluation missions
- Record results of evaluation missions on the Evaluation Summary Sheet—last page of the workbook.

3. Let your men know how they did on the evaluation missions and how their performance compares to their previous performances.

4. Encourage your men to be fast and more accurate.

DAY 2**Fire Mission 1**

Fire Mission
 Number One Adjust
 Charge 3

	Yes	No
1. Deflection 3153, Quadrant 412		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3186, Quadrant 393		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3219, Quadrant 365		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3180, Quadrant 299		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 2

Fire Mission 2

Fire Mission
Number One Adjust
Charge 5

	Yes	No
1. Deflection 3222, Quadrant 412		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3255, Quadrant 430		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3210, Quadrant 390		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3182, Quadrant 342		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 2**Fire Mission 3**

Fire Mission
 Number One Adjust
 Charge 6

	Yes	No
1. Deflection 3132, Quadrant 516		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3251, Quadrant 613		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3249, Quadrant 600		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3200, Quadrant 556		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 2

Fire Mission 4

Fire Mission
Number One Adjust
High Angle
Charge 5

	Yes	No
1. Deflection 3265, Quadrant 1005		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3321, Quadrant 1111		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3297, Quadrant 1068		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3211, Quadrant 978		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 2

Fire Mission 5—use aiming posts

Fire Mission
Number One Adjust
Charge 4

	Yes	No
1. Deflection 3139, Quadrant 373		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3027, Quadrant 417		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3162, Quadrant 503		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3181, Quadrant 514		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 2

Fire Mission 6

Fire Mission
Number One Adjust
High Angle
Charge 4

	Yes	No
1. Deflection 3236, Quadrant 1017		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3301, Quadrant 1047		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3356, Quadrant 1059		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3407, Quadrant 998		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 2**Fire Mission 7**

Fire Mission
Number One Adjust
Charge 6

	Yes	No
1. Deflection 3425, Quadrant 601		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3445, Quadrant 610		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3449, Quadrant 614		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3462, Quadrant 623		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 2

Fire Mission 8—use aiming posts

Fire Mission
Number One Adjust
High Angle
Charge 3

	Yes	No
1. Deflection 3012, Quadrant 1021		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3077, Quadrant 1093		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3126, Quadrant 1124		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3200, Quadrant 947		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 2

Direct Fire

Mission 1

Instructions: Pick out a target to your front at approximately the range given below. Read the fire commands, then check the accuracy of the sight pictures taken up by your Gunner and AG. Have the Gunner use the central laying method.

Target that _____, _____ (Left/Right) Front,

**A. Lead Right 5, Range 900,
Fire at Will**

Gunner's Sight Picture

Range

Go	No Go

B. Cancel Lead, Drop 100

Gunner's Sight Picture

Range

End of Mission

DAY 2

Direct Fire

Mission 2

Instructions: Pick out a target to your front at approximately the range given below. Read the fire commands, then check the accuracy of the sight pictures taken up by your Gunner and AG. Have the Gunner use the central laying method.

Target that _____, _____ (Left/Right) Front,

A. Lead Left 10, Range 400,

Fire at Will

Gunner's Sight Picture

Range

Go	NoGo

B. Lead Left 15, Add 200

Gunner's Sight Picture

Range

End of Mission

DAY 2**Direct Fire****Mission 3**

Instructions: Pick out a target to your front at approximately the range given below. Read the fire commands, then check the accuracy of the sight pictures taken up by your Gunner and AG. Have the Gunner use the central laying method.

Target that _____, _____ (Left/Right) Front,

A. Lead Right 10, Range 600,

Fire at Will

Gunner's Sight Picture

Range

B. Lead Right 15, Drop 50

Gunner's Sight Picture

Range

Go	No Go

End of Mission

Instructions for Administering Evaluation Missions

We included timed evaluation fire missions each day so you and your section can chart your improvement. You will administer and time the exercises. Be as accurate as possible in timing and checking the correctness of your men's work.

1. Begin each mission at base deflection 3200 quadrant 300.
2. Read fire commands
3. Time your section's performance
 - Use your watch's second hand
 - Time each fire mission and command the same way.
 - Start timing after you say the deflection
 - Stop timing when the Gunner says "Ready."
4. Record the response time for each command.
5. Check accuracy
 - Dial settings
 - Sight Picture correct
 - Bubbles level
6. If you detect an error double the response time for that command.
7. After completing both fire missions
 - Add up response times for each mission
 - Record results on the Evaluation Summary Page—last page of the workbook.
8. Compare your section's time with the day(s) before
9. Note if any errors occurred more than once. Work on correcting them during the next practice session.
10. Let your section know their times and how they are progressing.

EVALUATION DAY 2

Fire Mission 1

Fire Mission
Number One Adjust
Charge 4

	Yes	No
1. Deflection 3312, Quadrant 315		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		
2. Deflection 3352, Quadrant 293		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		
3. Deflection 3349, Quadrant 290		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		
4. Deflection 3318, Quadrant 370		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		

End of Mission

Total Time for Fire Mission _____

EVALUATION DAY 2

Fire Mission 2

Fire Mission

Number One Adjust

Charge 6

	Yes	No
1. Deflection 3150, Quadrant 441		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		
2. Deflection 3025, Quadrant 461		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		
3. Deflection 3034, Quadrant 456		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		
4. Deflection 3018, Quadrant 443		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		

End of Mission

Total Time for Fire Mission _____

**Record Today's Evaluation
Results on the Summary Sheet
Located on the Last Page
of the Workbook**

**Give Your Gunner and Assistant
Gunner Feedback on Their
Performance**

Instructions for Practice Fire Missions

1. Have your section perform each fire mission.

Each day's practice session includes:

- 8 indirect fire missions
- 3 direct fire missions
- 2 evaluation missions

2. Begin each fire mission at base deflection 3200 quadrant 300

- Read fire commands
- Check accuracy
 - Check that gunner and AG entered correct numbers on dials
 - Check Gunner's Sight Picture
 - Check that all bubbles are level
- Record errors in appropriate box for each fire command
- Read instructions for administering evaluation missions
- Administer evaluation missions
- Record results of evaluation missions on the Evaluation Summary Sheet—last page of the workbook.

3. Let your men know how they did on the evaluation missions and how their performance compares to their previous performances.

4. Encourage your men to be fast and more accurate.

DAY 3**Fire Mission 1**

Fire Mission
 Number One Adjust
 Charge 4

	Yes	No
1. Deflection 3132, Quadrant 516		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3251, Quadrant 613		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3233, Quadrant 579		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3199, Quadrant 412		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 3

Fire Mission 2

Fire Mission
Number One Adjust
Charge 5

	Yes	No
1. Deflection 3165, Quadrant 411		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3265, Quadrant 524		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3139, Quadrant 373		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3242, Quadrant 351		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 3**Fire Mission 3**

Fire Mission
 Number One Adjust
 Charge 5

	Yes	No
1. Deflection 3242, Quadrant 417		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3227, Quadrant 376		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3236, Quadrant 345		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3276, Quadrant 299		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 3

Fire Mission 4

Fire Mission
Number One Adjust
High Angle
Charge 4

	Yes	No
1. Deflection 3279, Quadrant 978		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3298, Quadrant 1003		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3300, Quadrant 984		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3341, Quadrant 1097		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 3**Fire Mission 5—use aiming posts**

Fire Mission

Number One Adjust

Charge 5

	Yes	No
1. Deflection 3100, Quadrant 411		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3199, Quadrant 351		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3263, Quadrant 312		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3301, Quadrant 297		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 3

Fire Mission 6

Fire Mission
Number One Adjust
High Angle
Charge 7

	Yes	No
1. Deflection 3266, Quadrant 1017		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3314, Quadrant 979		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3347, Quadrant 888		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3333, Quadrant 901		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 3**Fire Mission 7—use aiming posts**

Fire Mission
 Number One Adjust
 Charge 6

	Yes	No
1. Deflection 3421, Quadrant 613		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3379, Quadrant 552		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3391, Quadrant 571		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3298, Quadrant 460		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 3

Fire Mission 8

Fire Mission
Number One Adjust
High Angle
Charge 4

	Yes	No
1. Deflection 3163, Quadrant 833		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3172, Quadrant 841		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3175, Quadrant 840		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3178, Quadrant 838		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 3**Direct Fire****Mission 1**

Instructions: Pick out a target to your front at approximately the range given below. Read the fire commands, then check the accuracy of the sight pictures taken up by your Gunner and AG. Have the Gunner use the central laying method.

Target that _____, _____ (Left/Right) Front,

**A. Lead Right 15, Range 1500,
Fire at Will**

Gunner's Sight Picture

Range

B. Cancel Lead, Drop 150

Gunner's Sight Picture

Range

Go	NoGo

End of Mission

DAY 3

Direct Fire

Mission 2

Instructions: Pick out a target to your front at approximately the range given below. Read the fire commands, then check the accuracy of the sight pictures taken up by your Gunner and AG. Have the Gunner use the central laying method.

Target that _____, _____ (Left/Right) Front,

A. Lead Left 10, Range 2000,

Fire at Will

Gunner's Sight Picture

Range

Go	No Go

B. Lead Left 15, Drop 200

Gunner's Sight Picture

Range

End of Mission

DAY 3**Direct Fire****Mission 3**

Instructions: Pick out a target to your front at approximately the range given below. Read the fire commands, then check the accuracy of the sight pictures taken up by your Gunner and AG. Have the Gunner use the central laying method.

Target that _____, _____ (Left/Right) Front,

**A. Lead Right 5, Range 500,
Fire at Will**

Gunner's Sight Picture

Range

B. Lead Left 5, Add 50

Gunner's Sight Picture

Range

Go	NoGo

End of Mission

Instructions for Administering Evaluation Missions

We included timed evaluation fire missions each day so you and your section can chart your improvement. You will administer and time the exercises. Be as accurate as possible in timing and checking the correctness of your men's work

1. Begin each mission at base deflection 3200 quadrant 300.
2. Read fire commands
3. Time your section's performance
 - Use your watch's second hand
 - Time each fire mission and command the same way.
 - Start timing after you say the deflection
 - Stop timing when the Gunner says "Ready."
4. Record the response time for each command.
5. Check accuracy
 - Dial settings
 - Sight Picture correct
 - Bubbles level
6. If you detect an error double the response time for that command.
7. After completing both fire missions
 - Add up response times for each mission
 - Record results on the Evaluation Summary Page—last page of the workbook.
8. Compare your section's time with the day(s) before
9. Note if any errors occurred more than once. Work on correcting them during the next practice session.
10. Let your section know their times and how they are progressing.

EVALUATION DAY 3

Fire Mission 1

Fire Mission
Number One Adjust
Charge 7

	Yes	No
1. Deflection 3240, Quadrant 278		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		
2. Deflection 3245, Quadrant 281		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		
3. Deflection 3214, Quadrant 201		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		
4. Deflection 3112, Quadrant 216		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		

End of Mission

Total Time for Fire Mission _____

EVALUATION DAY 3

Fire Mission 2

Fire Mission
Number One Adjust
Charge 4

	Yes	No
1. Deflection 3325, Quadrant 320		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		
2. Deflection 3316, Quadrant 315		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		
3. Deflection 3332, Quadrant 328		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		
4. Deflection 3382, Quadrant 187		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		

End of Mission

Total Time for Fire Mission _____

**Record Today's Evaluation
Results on the Summary Sheet
Located on the Last Page
of the Workbook**

**Give Your Gunner and Assistant
Gunner Feedback on Their
Performance**

Instructions for Practice Fire Missions

1. Have your section perform each fire mission.

Each day's practice session includes:

- 8 indirect fire missions
- 3 direct fire missions
- 2 evaluation missions

2. Begin each fire mission at base deflection 3200 quadrant 300

- Read fire commands
- Check accuracy
 - Check that gunner and AG entered correct numbers on dials
 - Check Gunner's Sight Picture
 - Check that all bubbles are level
- Record errors in appropriate box for each fire command
- Read instructions for administering evaluation missions
- Administer evaluation missions
- Record results of evaluation missions on the Evaluation Summary Sheet—last page of the workbook.

3. Let your men know how they did on the evaluation missions and how their performance compares to their previous performances.

4. Encourage your men to be fast and more accurate.

DAY 4**Fire Mission 1**

Fire Mission
 Number One Adjust
 Charge 5

	Yes	No
1. Deflection 3121, Quadrant 614		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3096, Quadrant 579		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3071, Quadrant 561		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3082, Quadrant 583		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 4

Fire Mission 2

Fire Mission
Number One Adjust
Charge 6

	Yes	No
1. Deflection 3277, Quadrant 396		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3305, Quadrant 421		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3347, Quadrant 482		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3291, Quadrant 404		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 4**Fire Mission 3**

Fire Mission
 Number One Adjust
 High Angle
 Charge 5

	Yes	No
1. Deflection 3077, Quadrant 914		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3104, Quadrant 957		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3054, Quadrant 978		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3027, Quadrant 1016		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 4

Fire Mission 4—use aiming posts

Fire Mission
Number One Adjust
Charge 6

	Yes	No
1. Deflection 3266, Quadrant 523		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3247, Quadrant 501		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3254, Quadrant 489		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3256, Quadrant 478		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 4**Fire Mission 5**

Fire Mission
 Number One Adjust
 High Angle
 Charge 7

	Yes	No
1. Deflection 3080, Quadrant 971		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3098, Quadrant 999		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3089, Quadrant 1008		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3121, Quadrant 982		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 4

Fire Mission 6

Fire Mission
Number One Adjust
Charge 5

	Yes	No
1. Deflection 3424, Quadrant 278		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3451, Quadrant 301		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3462, Quadrant 333		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3489, Quadrant 422		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 4**Fire Mission 7—use aiming posts**

Fire Mission
 Number One Adjust
 Charge 6

	Yes	No
1. Deflection 3333, Quadrant 247		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3386, Quadrant 189		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3298, Quadrant 301		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3290, Quadrant 310		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 4

Fire Mission 8—use aiming posts

Fire Mission
Number One Adjust
Charge 4

	Yes	No
1. Deflection 3424, Quadrant 410		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
2. Deflection 3401, Quadrant 444		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
3. Deflection 3371, Quadrant 463		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
4. Deflection 3200, Quadrant 300		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		

End of Mission

DAY 4**Direct Fire****Mission 1**

Instructions: Pick out a target to your front at approximately the range given below. Read the fire commands, then check the accuracy of the sight pictures taken up by your Gunner and AG. Have the Gunner use the central laying method.

Target that _____, _____ (Left/Right) Front,

**A. Lead Right 15, Range 1300,
Fire at Will**

Gunner's Sight Picture

Range

B. Lead Left 20, Add 100

Gunner's Sight Picture

Range

Go	No Go

End of Mission

DAY 4

Direct Fire

Mission 2

Instructions: Pick out a target to your front at approximately the range given below. Read the fire commands, then check the accuracy of the sight pictures taken up by your Gunner and AG. Have the Gunner use the central laying method.

Target that _____, _____ (Left/Right) Front,

**A. Lead Left 20, Range 1100,
Fire at Will**

Gunner's Sight Picture

Range

B. Cancel Lead, Drop 200

Gunner's Sight Picture

Range

Go	No Go

End of Mission

DAY 4**Direct Fire****Mission 3**

Instructions: Pick out a target to your front at approximately the range given below. Read the fire commands, then check the accuracy of the sight pictures taken up by your Gunner and AG. Have the Gunner use the central laying method.

Target that _____, _____ (Left/Right) Front,

**A. Lead Right 10, Range 1400,
Fire at Will**

Gunner's Sight Picture

Range

B. Lead Right 25, Add 100

Gunner's Sight Picture

Range

Go	NoGo

End of Mission

Instructions for Administering Evaluation Missions

We included timed evaluation fire missions each day so you, and your section can chart your improvement. You will administer and time the exercises. Be as accurate as possible in timing and checking the correctness of your men's work.

1. Begin each mission at base deflection 3200 quadrant 300.
2. Read fire commands
3. Time your section's performance
 - Use your watch's second hand
 - Time each fire mission and command the same way
 - Start timing after you say the deflection
 - Stop timing when the Gunner says "Ready "
4. Record the response time for each command.
5. Check accuracy
 - Dial settings
 - Sight Picture correct
 - Bubbles level
6. If you detect an error double the response time for that command.
7. After completing both fire missions
 - Add up response times for each mission
 - Record results on the Evaluation Summary Page—last page of the workbook.
8. Compare your section's time with the day(s) before
9. Note if any errors occurred more than once. Work on correcting them during the next practice session.
10. Let your section know their times and how they are progressing.

EVALUATION DAY 4

Fire Mission 1

Fire Mission
Number One Adjust
Charge 4

	Yes	No
1. Deflection 3195, Quadrant 303		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		
2. Deflection 3226, Quadrant 223		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		
3. Deflection 3114, Quadrant 203		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		
4. Deflection 3074, Quadrant 230		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		

End of Mission

Total Time for Fire Mission _____

EVALUATION DAY 4

Fire Mission 2

Fire Mission
Number One Adjust
Charge 5

	Yes	No
1. Deflection 3191, Quadrant 305		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		
2. Deflection 3207, Quadrant 318		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		
3. Deflection 3257, Quadrant 177		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		
4. Deflection 3132, Quadrant 157		
Bubbles Level		
Sight Picture Correct		
Dial Settings Correct		
Performance Time _____		

End of Mission

Total Time for Fire Mission _____

**Record Today's Evaluation
Results on the Summary Sheet
Located on the Last Page
of the Workbook**

**Give Your Gunner and Assistant
Gunner Feedback on Their
Performance**

PRACTICE EVALUATION SUMMARY SHEET

DAY 1

Total Time Fire Mission 1 _____

Total Time Fire Mission 2 _____

Total Time Day 1 _____

Error Summary

How Many Times Were:

- Bubbles Not Level _____
- Sight Pictures Wrong _____
- Dial Settings Incorrect _____

DAY 2

Total Time Fire Mission 1 _____

Total Time Fire Mission 2 _____

Total Time Day 2 _____

Error Summary

How Many Times Were:

- Bubbles Not Level _____
- Sight Pictures Wrong _____
- Dial Settings Incorrect _____

DAY 3

Total Time Fire Mission 1 _____

Total Time Fire Mission 2 _____

Total Time Day 3 _____**Error Summary**

How Many Times Were:

- Bubbles Not Level _____
- Sight Pictures Wrong _____
- Dial Settings Incorrect _____

DAY 4

Total Time Fire Mission 1 _____

Total Time Fire Mission 2 _____

Total Time Day 4 _____**Error Summary**

How Many Times Were:

- Bubbles Not Level _____
- Sight Pictures Wrong _____
- Dial Settings Incorrect _____